

REMARKS / ARGUMENTS

Reconsideration of the application is requested.

Claims 1-5 and 21 remain in the application. Claim 5 has been amended. Claim 21 has been added. Claims 1-4 have been withdrawn. Claims 6-20 have been cancelled.

In the section entitled "Claim Rejections - 35 USC § 102" on pages 2-5 of the above-mentioned Office action, claims 5-20 have been rejected as being anticipated by Summerfelt (US Pat. No. 5,679,980) under 35 U.S.C. § 102(b).

The rejection has been noted and claim 5 has been amended in an effort to even more clearly define the invention of the instant application. Support for the changes is found on page 10, line 19 to page 11, line 7 of the specification.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 5 calls for, inter alia:

a metal barrier layer disposed on said semiconductor substrate, said metal barrier layer being one of silicon oxide and silicon nitride;

a metal-oxide-layer disposed on said metal barrier layer, said metal-oxide-layer being one of TiO_2 , Ta_2O_5 , and Al_2O_3 .

The layer 50 of Summerfelt, which is compared with the metal oxide layer (3) of the invention of the instant application by the Examiner, can be nitride, silicide, carbide, boride, single component semiconductor, reactive metal, or compound semiconductor. It cannot be determined from the TABLE in columns 10-13 of Summerfelt that a metal oxide layer is desired. In the claims of the instant application, the metal oxide layer is defined to be one of TiO_2 , Ta_2O_5 , and Al_2O_3 . In column 13, lines 8-10 of Summerfelt, it is disclosed that oxidizable layer combinations of the above materials may be used. However, this only means that such combinations may be used, which include an oxidizable layer. This also means that the layer combination is not necessarily oxidized.

In Summerfelt, the element 50 is a conductive contact plug (see column 12, lines 51-52). However, tantalum oxide, titanium oxide, or aluminum oxide is non-conductive. Therefore, Applicants believe that column 13, lines 8-10 of Summerfelt do not teach the use of TiO_2 , Ta_2O_5 , and Al_2O_3 (oxidized layers), since these layers would be non-conductive and the plug 50 would not serve as a conductive plug which is desired in Summerfelt.

In addition, the invention of the instant application calls for a metal barrier layer being one of silicon oxide and silicon nitride, which are non-conductive materials. The Examiner has stated with respect to claim 17 (the subject matter of which has been added to claim 5) that Summerfelt discloses a metal barrier layer between the metal oxide layer and the substrate. However, the function of the contact plug 50 in Summerfelt is to make a connection between the capacitor over the plug to a functional device within the substrate 30. Summerfelt desires to establish a conductive path from the substrate 30 to the electrode 36. Thus, it cannot be obvious from Summerfelt to place a barrier layer being silicon oxide or silicon nitride between the plug 50 and the substrate 30, and the provision of a barrier layer between the metal oxide layer and the semiconductor substrate layer according to the invention of the instant application is not obviated by Summerfelt.

Clearly, Summerfelt does not show "a metal barrier layer disposed on said semiconductor substrate, said metal barrier layer being one of silicon oxide and silicon nitride; a metal-oxide-layer disposed on said metal barrier layer, said metal-oxide-layer being one of TiO_2 , Ta_2O_5 , and Al_2O_3 ," as recited in claim 5 of the instant application.

Claim 5 is, therefore, believed to be patentable over the art.

Claim 21 has been added. Support for claim 21 is found on page 11, lines 9-20 of the specification. In claim 21, the oxidation inhibiting layer is composed of silicon nitride and the electrode layer disposed on the oxidation inhibiting layer is a polysilicon layer. Claim 21 is believed to be patentable over the art for the same reasons as discussed above.

In view of the foregoing, reconsideration and allowance of claims 5 and 21 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate a telephone call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition for extension is herewith made. Please charge any fees which might be due with respect to 37 CFR Sections 1.16 and 1.17 to

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Respectfully submitted



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